

INTRODUCTION

The art of surgery, in its long upward climb, has always been based on a substrate of science. In its earliest stages, anatomy was the foundation of its structure. Later, when the nature and reception of disease became known, pathology was added, providing the essential background. To-day we have further progressed and are now in an era of physiological surgery. Not only is the knowledge and control of all phases of bodily function necessary to the care of the surgical patient, but operations may be done safely for deranged physiological functions, and the structures so attacked may be morphologically normal.

Nowhere is this physiological basis more striking than in the surgery of the thyroid gland. Of all the organs of internal secretion, the thyroid gland was the first to come within the domain of the surgeon. It has been the

SIX CASES OF GOITRE SEEN IN WARDS

15 and 16 OF THE ROYAL INFIRMARY
OF EDINBURGH DURING APRIL AND MAY
1967, PRESENTED FOR THE PATTISON
PRIZE IN CLINICAL SURGERY.

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J.R.D. Brown, Final Phase,
M.B., Ch.B.

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The art of surgery, in its long upward climb, has always been based on a substrate of science. In its earliest stages, anatomy was the foundation of its structure. Later, when the nature and causation of disease became known, pathology was added as providing the essential background. To-day we have further progressed and are now in an era of physiological surgery. Not only is the knowledge and control of all phases of bodily function necessary to the care of the surgical patient, but operations may be done solely for derangements of physiology, and the structures so attacked may be morphologically normal.

Nowhere is this physiological basis more striking than in the surgery of the endocrine system. Of all the organs of internal secretion, the thyroid gland was the first to come within the domain of the surgeon. It has been the object of by far the largest number of operations, and the experiences gained thereby introduced the entire concept of endocrine physiology. Mechanical disturbances from enlargement of the thyroid gland were recognised in the Graeco - Roman period and occasional operation for goitre found their way into the literature since that time. The proximity of large blood vessels, important nerves, and vital structures including the larynx and trachea made such operations too dangerous to undertake except by the most courageous.

The pioneer in modern thyroid surgery was Theodore Kocher, the greatest Swiss surgeon of all time. His contributions to the knowledge and treatment of thyroid diseases in particular were of such overwhelming significance that they brought him the Nobel Prize in 1909.

Gigantic nodular goitres causing respiratory obstruction to the point of asphyxia, to say nothing of the cruel cosmetic disfigurements, constituted the initial challenge. The preliminary ligation of the four principal arteries which he introduced very materially reduced the volume and danger of bleeding. Year after year during his long tenure at Berne, Kocher issued successive reports of his goitre material. These/-

These trace the refinements of his surgical methods and disclose a reduction in the mortality rate from very high initial figures of 12.8% (1883) to an eventual level of less than 0.5%. Hyperthyroidism, exophthalmic goitre had been described by Parry (1825), Graves (1835) and Basedow (1840).

Three major pitfalls threaten in the radical extirpation of the thyroid gland: injury of the recurrent laryngeal nerves with subsequent loss of voice or even respiratory insufficiency; removal of the parathyroid glands with consequent tetany; and the absence of sufficient functioning thyroid tissue which results in myxoedema. In the period of the beginning of Kocher's work, the hazard of laryngeal nerve injury was well recognised, since Galen had demonstrated the effect of section of these nerves on phonation, centuries earlier.

The function of the thyroid gland, however, was still wrapped in mystery. Several theories had been advanced, but it had not been demonstrated that this gland was essential to life and well being. It came as a disheartening shock to the conscientious Kocher when he suddenly discovered that those grateful patients he had so skilfully relieved of their suffocating goitres had been reduced to a cretinoid and almost imbecilic state. Of a series of 34 patients upon whom total extirpation had been done, eighteen returned for examination, and all but two of these revealed the evidences of myxoedema. Those with partial resections, and those with only a hemithyroidectomy were spared. Kocher determined never again to remove the whole gland for benign disease. Thus surgery established an important physiological fact, namely that the thyroid gland is essential to normal life, and that the cretinoid or myxoedematous state which had been observed in spontaneous form, is a manifestation of thyroid insufficiency.

Tetany, the third potential major complication of thyroidectomy, was confused with myxoedema. The tiny parathyroid bodies had but recently been discovered and their function was entirely unknown. Gley (1891) and Vassale and Generali (1896) proved the relationship of their removal to tetany. Their role in the control of calcium metabolism grew out of the observation by MacCallum and Voegtlin (1909) that the blood calcium was low in hypoparathyroidism.

The presenting challenge of goitre to Kocher and his early contemporaries was the huge suffocating thyroid enlargements which were frequently associated with hypothyroidism, and rarely with hyperthyroidism. Exophthalmic goitre had been described by Parry (1825), Graves (1835) and Basedow (1840). In Kocher's successive series of thyroid operations a very low incidence of such cases were included (five out of 250 cases reported in 1881). Other surgeons in Germany and elsewhere in Europe were struggling with hyperthyroidism as the second indication for thyroidectomy, one in which the nature of the disease itself made the operation very dangerous. Here were alarming disturbances in physiology, a problem to be overcome by surgery. The conquest of this phase of the thyroid problem was subsequently largely effected by American surgeons. The work of George Crile and his elaborate ritual of "stealing" the thyroid, creeping up on the patient, as it were, and snatching the gland before fear and excitement could wreak their devastating effect, is worth particular mention. The introduction of iodine as a pre-operative measure by Plummer of the Mayo Clinic (1922), a drug that had been considered literally a poison to goitre patients, led to a degree of safety at surgery almost comparable to that for simple goitre. The later developments, the anti-thyroid drugs and finally the radioactive isotopes, have not only further increased the safety of operation, but have in part supplanted surgery for hyperthyroidism.

- Refs: 1. Great Ideas in the History of Surgery.
Zimmoman and Veitch, Ed. Williams and Wilkins,
Baltimore 1961.
2. The Operative Story of Goitre. William Halstead.
The John Hopkins Hospital Reports, Vol.19, 1919,
Supplement, pp. 71 - 257.

There follows a description, with commentary, of six cases of goitre treated surgically in the Royal Infirmary during the writer's membership of the class of clinical surgery during April and May 1967.

Some of the features of treatment mentioned in the historical introduction, are described in more detail in their context of clinical surgery.

These six cases are by no means representative of all the types of thyroid enlargement that may present to the surgeon; they merely represent the cases with which the writer came into contact.

The figures concerning the 1472 Cases of Thyroid Disorder treated surgically between 1948 and 1964, are unpublished, and are quoted by kind permission of Mr. J.R. Cameron and Mr. M.A. Henderson.

The appendix at the end of this report contains details of physical examination of patients, of operative technique, and of pathological reports.

Further questioning elicited that she suffered from excessive perspiration, intolerance of heat, scanty irregular menstruation and at least three bowel movements per day. She did not admit to any increased irritability or eye complaints. There had been no recent change in her weight, and her appetite was, as always, good.

On examination there was a smooth swelling on the right side of her neck which covered when the patient swallowed. A bruit was heard over the gland. The patient had a fine finger tremor. Pulse was 100 per minute and regular in rhythm and bounding in character. A soft systolic aortic murmur was heard in the pulmonary area. Blood pressure was 100/75. All reflexes were brisk.

Results of investigations were as follows:

1. Urinalysis - No abnormality.
2. E.C.G. on day of admission. Sinus tachycardia 100/minute.
3. Radio-iodine uptake test: 4 hours 89%
24 hours 94%
4. 48 hour P.B.I. 111

On admission treatment with Carbimazole 50 mg. t.i.d. and Phenobarbitone 40 mg. t.i.d. was commenced.

COMMENT:

A 4 hour radio-iodine uptake of greater than 45% and a 48 hour P.B.I. ¹¹¹ of greater than 8% are three make a diagnosis of thyrotoxicosis virtually certain. Thus the results of these tests on Mrs. W. confirmed the clinical evidence/-

CASE I. Mrs. W.

A Case of Primary Toxic Goitre.

Mrs. W. aged 36, first consulted her general practitioner on account of a swelling in her neck in September 1966. Her G.P. referred her to the Endocrine Clinic at the Royal Infirmary. Following this consultation, admission to Ward 24 was arranged.

On admission to Ward 24 her chief complaints were

- (1) Palpitations for one year
- (2) Swelling in the neck for 2-3 months.

Further questioning elicited that she suffered from excessive perspiration, intolerance of heat, scanty irregular menstruation and at least three bowel movements per day. She did not admit to any increased irritability or eye complaints. There had been no recent change in her weight, and her appetite was, as always, good.

On examination there was a smooth swelling on the right side of her neck which moved when the patient swallowed. A soft systolic bruit was heard over the gland. The patient had warm moist palms and a fine finger tremor. Pulse was 100 per minute and regular in rhythm and bounding in character. A soft systolic ejection murmur was heard in the pulmonary area. Blood pressure was 150/75. All reflexes were brisk.

Results of investigations were as follows:

1. Urinalysis - No abnormality.
2. E.C.G. on day of admission. Sinus tachycardia 150/minute.
3. Radio-iodine uptake test: 4 hours 89%
24 hours 90%
4. 48 hour P.B.I.¹³¹ 0.48% per litre.

On admission treatment with Carbimazole 20 mg. t.i.d. and Phenobarbitone 40 mg. t.i.d. was commenced.

COMMENT:

A 4 hour radio-iodine uptake of greater than 45% and a 48 hour P.B.I.¹³¹ of greater than 0.4% per litre make a diagnosis of thyrotoxicosis virtually certain. Thus the results of these tests on Mrs. W. confirmed the clinical evidence/-

evidence of thyrotoxicosis.

PROGRESS:

5th October, 4.30 p.m. Pulse 130 totally irregular. E.C.G. showed fast atrial fibrillation. No treatment was given at that time, but when the arrhythmia persisted on 6th October, the patient was started on 10 mg. Propranolol t.i.d.

On 8th October, E.C.G. showed sinus rhythm and a rate of 85 per minute.

On 11th October, patient was discharged home on Phenobarbitone 40 mg. b.d., Carbimazole 20 mg. t.i.d. and Propranolol 20 mg. t.i.d.

Between 1st November 1966 and 21st February 1967, Mrs. W reported regularly to the Endocrine Clinic. A summary of the reports are as follows:

1st November: Carbimazole reduced to 45 mg. per day.

Propranolol 30 mg. per day.

Serum P.B.I. now 8.8 ug%.

24th November: Thyrotoxicosis now clearly under control.

Propranolol withdrawn, Carbimazole reduced 30 mg. per day. Serum P.B.I. now 7.8 ug%.

21st December: Continued good health, but still considerable diffuse enlargement of thyroid, and bouts of tachycardia still occurring. The question of thyroidectomy was raised with the patient.

30th January 1967: Euthyroid. Carbimazole 20 mg. per day. Still subject to palpitations when excited. Referred for surgical opinion.

21st February: Patient was now clinically slightly hypothyroid. Carbimazole reduced to 15 mg. per day. P.B.I. 3.6 ug%.

2nd March: Having seen the patient, Mr. McIntosh agreed to carry out a subtotal thyroidectomy.

9th March: Mrs. W. was referred to E.N.T. Surgeons who reported that she had normally functioning vocal cords.

29th March:-

29th March: Carbimazole stopped. Potassium Iodide 60 mg.
t.i.d. commenced.
7th April: Admitted to Ward 30 (Medical)
9th April: Transferred to Ward 15 (Surgical).

2. The reasons for surgery in this series were as follows:

(a) On admission to Ward 15 examination of the patient revealed a smooth, hard, symmetrically enlarged thyroid gland. No bruit was audible over the gland. There was definite exophthalmos and slight lid retraction. No fine finger tremor was observed.

Pulse was 88 per minute and regular apart from occasional extrasystoles. Blood pressure was 160/105. (It was noted as significant that Mrs. W. had become hypertensive during both her two pregnancies). The apex beat was thumping in character, but not displaced laterally.

In addition to her previous complaints Mrs. W now complained of a little difficulty on swallowing, especially with hard foods. X-ray of chest showed no tracheal compression or deviation.

In summary, Mrs. W. was now clinically euthyroid. (For further details of clinical examination, and for full operation notes, see appendix).

On 11th April the operation of subtotal ($\frac{7}{8}$) thyroidectomy was carried out. During operation the right inferior parathyroid gland was seen and carefully preserved. A Redivac drain was inserted and the skin closed with clips.

The pathological report obtained later confirmed the clinical diagnosis. The gland weighed 65 gm. (normal 20-30 gm.) "The appearances are those of involution with an occasional focus of residual hyperplasia. Lymphocytic infiltration is present to a moderate degree, with some formation of germinal centres."

COMMENTS:

1. A total of 1472 cases of Thyroid Disease were treated surgically in Wards 15/16 between 1948 and 1964, of these 671/-

671 or 45.6% were for thyrotoxicosis: $\frac{3}{4}$ of these cases were classed as primary thyrotoxicosis. 87% of these cases were females, and the maximum incidence was in the 30 - 40 age group (Mrs. W. was 36).

2. The reasons for surgery in this series were as follows:

- | | |
|----------------------------------|-------|
| (a) Failure of medical treatment | 57.8% |
| (b) Physical symptoms | 40.2% |
| (c) Diagnostic | 1% |
| (d) Others | 1% |

Mrs. W. belongs to Group (b), reasons for surgery in her case being the large size of her gland, the persistence of minimal cardiovascular symptoms, and her comparatively young age.

3. The standard operation for thyrotoxicosis is removal of approximately $\frac{7}{8}$ of the gland, the remaining $\frac{1}{8}$ being sufficient to maintain normal thyroid function. This was the operation carried out in 98% of the aforementioned 671 cases. Removal of any less of the gland is followed by hyperplasia of the remaining tissue and recurrence of thyrotoxicosis.

POST-OPERATIVE PROGRESS:

12th April: Penicillin-sensitive pneumococci were isolated from patient's sputum. White Blood Cell Count 13,900.

1 mega-unit Benzyl-penicillin given 6-hourly.

Routine physiotherapy.

Chest X-ray showed no abnormality.

14th April: Mrs. W. complained of tingling sensation in the limbs and around her mouth. Trousseau's and Chvostek's signs were positive. Serum calcium was 5.2 mg% (Normal 9-11). 20 ml. of 10%

Calcium Gluconate were immediately given

intravenously and 2 gm. of Calcium Sandoz

4-hourly by mouth was prescribed together with

intramuscular injections of 50,000 I.U. Calciferol 6-hourly.

Consecutive results of serum calcium and phosphate estimations were as follows:

Date.	Ca. Mg./100 ml.	Phosphate mg/100 ml.
14th April	5.2	
15th April	5.8	4.2
17th April/-		

Date.	Ca. Mg./100 ml.	Phosphate mg/100 ml.
17th April	6.3	3.3
18th April	6.8	4.2
19th April	7.3	3.9
21st April	7.5	3.1

- 18th April: Paraesthesia still present in the limbs, especially in the mornings. Chvostek's sign negative.
Patient was now having fairly severe diarrhoea (5 watery motions on the morning of 18th). A stool specimen was sent for bacteriological examination, but no salmonella, shigella, staphylococci or other pathogenic organisms were isolated. Codeine Phosphate 30 mg. b.d. prescribed.
- 19th April: Since the Ca Sandoz was the probable cause of the diarrhoea, this was reduced to 1 gm. 6-hourly. The Codeine phosphate was discontinued and Mist. Kaolin et Morphine 15 ml. q.i.d. substituted.
- 20th April: Diarrhoea ceased. Minimal paraesthesiae still present. Indirect laryngoscopy revealed no abnormality of the vocal cords.
- 23rd April: Mrs. W. was discharged home on Ca Sandoz 1 gm. q.i.d. and Calciferol 50,000 i.u. (1.25 mg) q.i.d. orally.
- 3rd May: Reported to S.C.D. No further attacks of tetany. No evidence of thyrotoxicosis. Calciferol reduced to 2.5 mg. daily. Serum Calcium 10.3 mg/100 ml.

COMMENTS.

1. In 671 cases of thyrotoxicosis treated surgically, the incidence of early complications of operation was as follows:

Haemorrhage	1.6%
Respiratory obstruction	0.4%
Laryngeal paralysis	0.9%
Tetany	1.8%
Thyrotoxic Crisis	0.9%
Death	0.5%
Wound Infection	1.7%

Mrs. W developed not tetany, but latent tetany. The incidence of permanent hypoparathyroidism was only 0.3%.

This/-

This fact together with the preservation of the right inferior parathyroid gland noted at operation, make it likely that the cause of Mrs. W's latent tetany is attributable to an embarrassed parathyroid circulation. It will therefore probably be possible to gradually tail off her oral Calcium and Calciferol tablets.

The incidences of post operative haemorrhage and respiratory obstruction quoted above give point to the insertion of a Redivac drain under the strap muscles in all thyroidectomies.

2. The incidence of late complications in the 671 quoted cases was as follows:

(a)	Recurrent Thyrotoxicosis	0.9%
(b)	Hypothyroidism	8.5%
(c)	Hypoparathyroidism	0.3%
(d)	Recurrent Nerve Paralysis	1.0%
(e)	Exophthalmos	0.5%

Mrs. W. was noted to have definite, though not serious, exophthalmos pre-operatively. It is to be hoped that this will now resolve itself, or at least not get any worse. If however there are signs of increasing exophthalmos, (this must be watched for on routine review at S.C.D.) further treatment will be necessary - Thyroxine, ACTH, Tarsorrhaphy, Orbital decompression etc.

3. An alternative to the surgical treatment of toxic goitres is the use of radio-iodine. However, this is never used in patients under the age of 45 years, the reasons being as follows: a) the possibility of detrimental genetic effects in future generations.

(b) The possibility that radio-iodine may induce carcinoma.

(c) The impossibility of being certain that the patient is not pregnant.

The incidence of hypothyroidism following treatment with radio-iodine, is much higher than that following surgery: 10% in the first year after therapy, and then 1% per annum thereafter. Signs of hypothyroidism may become evident for the first time many years after the treatment.

CASE II Mrs. S.

A Case of Simple Nodular Goitre.

Mrs S., aged 53, first noticed a lump in her neck in April 1966. This worried her considerably, but she kept the knowledge to herself for about a month, before confiding in a neighbour who persuaded her to tell her husband who in turn persuaded her to consult the family doctor. The General Practitioner referred her to Dr. Irvine of the Endocrine Clinic, R.I.E.

12th July 1966: Scan of neck following administration of radio-active iodine showed some irregularity in uptake of isotope throughout the thyroid, and the clinical impression was of a multi-nodular non toxic goitre. Radio-iodine function tests were within normal limits. Dr. Irvine himself thought that no specific treatment was indicated, but referred her to Mr. McNair for a surgical opinion.

29th July 1966: Mr. T.J. McNair agreed with the diagnosis of simple nodular goitre, but thought it advisable to have this confirmed by operation, and to resect the gland as necessary. He also considered that this would be of cosmetic benefit to the patient. Mrs. S. accordingly had her name put on the waiting list.

30th January 1967: Mrs. S. was admitted to Ward 15. She was found to be in a highly nervous state and very agitated. She volunteered the information that she had been present at the sudden and unexpected death of her sister-in-law two days previously.

Hands were warm and sweaty. Pulse 80 per minute. The overall clinical picture was one of thyrotoxicosis.

In preparation for her operation, chest X-ray showed no abnormality. X-ray of cervical region and thoracic inlet showed a little displacement of the trachea to the left, but no evidence of compression: the thoracic inlet was normal. The E.N.T. surgeons reported that her vocal cords were functioning normally.

31st January, 1967/-

31st January, 1967: Four hour ^{131}I . uptake 56%. This confirmed the clinical impression of thyrotoxicosis, so operation was postponed, the patient discharged home, and a letter written to Dr. Irvine concerning her future management.

COMMENT.

To operate on a patient with uncontrolled thyrotoxicosis is to invite a post-operative thyrotoxic crisis. This may be looked upon as a hyperacute phase of thyrotoxicosis. Rather suddenly the patient passes into an intensely toxic, confused state, with a pulse rate of 150-200. Usually there is considerable pyrexia (up to 106°F). Treatment includes the use of ice packs and the administration of intravenous Lugol's solution, sedation, Penicillin, and intravenous Hydrocortisone.

25th February 1967: Having seen the patient, Dr. Irvine gave the opinion that the episode of toxicity was consequent upon a period of acute emotional stress. A series of thyroid function tests were arranged.

28th March 1967: Results of tests were to hand:-

P.B.I. 6.9 ug%

T.3 Resin Test 1.0

4 hour ^{131}I uptake 20%

These confirmed the clinical impression that Mrs. S. was once again euthyroid. Admission to Ward 15 was accordingly re-arranged.

COMMENT.

It is well known that acute emotional stress may precipitate thyrotoxicosis - presumably acting through the Cortico - hypothalamo - pituitary axis.

17th April, 1967: Mrs. S. was readmitted to Ward 15. On questioning, her history yielded no evidence of thyrotoxicosis (excepting the episode already mentioned) or of symptoms due to tissue compression by the thyroid gland. There had been no intolerance of heat or excessive sweating. Her weight was steady and appetite normal. No dysphagia difficulty in swallowing or changes in her voice. There was no family history of thyroid trouble.

Further/-

Further questioning revealed an allergy to aspirin, which had been supposed responsible for a haematemesis necessitating admission to Ward 28 3 years previously. It was of interest that this also had followed immediately after the witnessing of a sudden death of a relative.

On examination the pulse was 70 per minute and regular in rhythm. The hands were warm and moist, but there was no evidence of any fine finger tremor. There was no exophthalmos or lid lag. Examination of the thyroid gland revealed a cystic swelling about 2 cms. in diameter to the right side of the isthmus, and a similar smaller swelling at the upper end of the left lateral lobe. The gland moved well on swallowing. No bruit was audible. The swellings were smooth and regular, and there was no associated lymphadenopathy.

19th April 1967: Mr. McNair carried out a partial thyroidectomy. The isthmus and $\frac{2}{3}$ of the right lobe were removed, leaving about $\frac{1}{3}$ of the gland intact. Parathyroid glands were seen on both sides, and carefully preserved. A portion of the gland was sent for frozen section histological examination, and was reported as being non-malignant. The wound was closed with skin clips in the usual fashion after inserting a suction drain.

Post-operative Progress.

20th April, 1967: Redivac drain removed. Less than 100 ml. of blood had been drained into the bottle. Chest clear. Routine physiotherapy. Routine haematological and biochemical reports normal.

21st April: Clips removed. Scar healing well.

24th April: Mrs. S. mobilising well. Discharged home.

COMMENTS.

1. Out of a total of 1472 cases of thyroid disease treated surgically between 1948 and 1964, 595 or 40.6% were for simple nodular goitre. 89% of the cases were female. Reasons for surgery were as follows:

(a)	Physical symptoms	73.7%
(b)	Diagnostic	25.5%
(c)	Others	0.8%

Mrs. S. would fall in Group (b), physical symptoms being secondary in her case. Thyroid lumps, like breast lumps, are potentially malignant. The fewer in number and the more discreet, the greater the possibility of malignancy: solitary modules of the thyroid must be regarded as potentially malignant. Mrs. S. had two fairly well defined swellings: only biopsy could confirm the benign nature of these, and their removal prevents the secondary development of thyrotoxicosis or carcinoma.

2. A frozen section report allows, in the event of malignancy being found, further surgical measures to be taken immediately and not several weeks later when the operation would be very hazardous due to the distorted anatomy.

3. One of the reasons for operating on a simple nodular goitre is to improve the patient's appearance from a cosmetic point of view. It is, therefore, very important that surgery should not leave behind disfiguring scars. Incision made transversely across the neck in parallel to Langer's lines enables the skin to heal with minimal formation of scar tissue. The use of Michel clips instead of stitches helps further: these may be removed on the 3rd - 5th day after operation.

4. In Mr. Cameron's series, the sex ratio in 595 cases of non-toxic goitre was 8.1 : 1 in favour of females. In his series of 110 cases of primary carcinoma of the thyroid, the sex ratio was 3.4 to 1 in favour of females. All cases of carcinoma were non toxic. Thus the likelihood of a case of non-toxic goitre in this series proving to be malignant, was more than twice as great in males as females.

CASE III Mr. H.

A case of primary thyrotoxicosis in the male, with features suggestive of Hashimoto's Lymphadenoid Goitre.

Mr. H., aged 33, was referred by his general practitioner to the Endocrine Clinic, R.I.E. on 23rd November 1965. His presenting complaints at that time were: Perpetual tiredness, intolerance of heat, increased sweating, nervousness, palpitations, and increased appetite together with the loss of $1\frac{1}{2}$ stones in weight over the previous year (10 sts. 8 lbs. - 9 sts. 2 lbs.)

On examination, the hands were warm and sweaty, and a fine finger tremor was clearly visible. There was no exophthalmos or lid lag. There was a diffuse smooth enlargement of the whole thyroid gland, to an estimated size of 50 - 60 gm. Results of thyroid function tests confirmed the clinical diagnosis of thyrotoxicosis, and were as follows:

P.B.I. 13.0 ug %
4 hour ^{131}I uptake 72.6%
48 hour P.B.I. ^{131}I 0.44% per litre.

Carbimazole 60 mg. per day was commenced.

For the next 15 months, Mr. H. reported regularly to the Endocrine Clinic. Relevant extracts from their notes are as follows:

24th January 1966: Wt. 10 st. 1 lb. Not yet restarted work. Still bad tempered. Thyroid larger - estimate 70 gm. Still hyperkinetic. Progress not satisfactory.

21st March: Wt. 10 sts. $6\frac{1}{2}$ lbs. Patient feels "great". is well and working. But still hyperkinetic and quick tempered. Bruit now audible over thyroid. Carbimazole reduced to 45 mg. per day.

18th May: Wt. 10 sts. 11 lbs. Sweats less. Less tired but still ill tempered. Thyroid now reduced in size (50 gm). Bruit audible over left lobe. Carbimazole reduced to 25 mg. per day for 1 month and then 30 mg. per day for 2 months. P.B.I. 5.5 ug%.

17th August/-

17th August: Had a hernia repair in the interim period. Wt. 10 sts. 11½ lbs. Thyroid further reduced in size (30 gm). Still sweating heavily. No finger tremor. Carbimazole reduced to 25 mg. per day for 1 month and then 20 mg. per day for 2 months. P.B.I. 5.5 ug%

12th October: Wt. 10 sts. 12½ lbs. Patient well, and says that he is better tempered. Thyroid 30 gm. Soft systolic bruit audible. Carbimazole reduced to 15 mg. per day for 1 month then 10 mg. per day for 1 month and then 5 mg. per day for 1 month. P.B.I. 6.3 ug%.

12th January 1967: Wt. 10 sts. 2 lbs. (Down 10½ lbs). Patient nervous and ill tempered again. Appetite increasing over past month. On examination, cold moist palms. Pulse 100 per minute, Thyroid nodular, 40-50 gm. Probable relapse. Carbimazole increased to 25 mg. per day. P.B.I. 10.0 ug% Complement Fixation Test for thyroid antibodies: Titre between 32 and 64. (Normal 0. Weak +ive up to 1:20). This is suggestive of the development of lymphadenoid goitre.

20th February: Patient referred to Mr. McNair for a surgical opinion. He advised thyroidectomy.

20th March: Wt. 10 sts. 6 lbs. Patient still not fully back to previous good health. Thyroid 40 gm. Carbimazole to be stopped, Potassium Iodide 60 mg. t.i.d. commenced on 12th April.

24th April: Admission to Ward 16.

On admission, his complaints were of short-temperedness, and minimal increase of appetite. He was intolerant of hot weather and suffered from "palpitations" in the evenings - he described these as a feeling of consciousness that his heart was beating quickly: this occurred only in the evenings, and usually after retiring to bed. The swelling in his neck did not trouble him - except that when swallowing hard food, he was conscious of its presence.

On examination his pulse rate was 96 per minute and the rhythm regular. Palms were warm and moist, but no finger tremor was visible. There was no exophthalmos or lid retraction. There was a smooth firm enlargement of both lateral lobes of the thyroid and of the isthmus, which lay very low over the trachea.

Chest/-

Chest X-ray showed no abnormality. X-ray of the neck showed moderate tracheal compression at C.4, but no deviation of the trachea.

Indirect laryngoscopy revealed normally functioning vocal cords.

Routine haematology normal except for white blood count of 13,200 for which there was no obvious cause (see comment 3). Blood cross-matched.

26th April: Subtotal thyroidectomy by Mr. McNair. At operation, the left lobe of the thyroid gland was found to be only slightly enlarged, but was markedly granular and vascular and adherent to the underlying strap muscles, as though to suggest Hashimoto's Thyroiditis. The right lobe was much larger and of a more typically toxic nature, but was still to some extent adherent posteriorly. A $\frac{7}{8}$ thyroidectomy was carried out on both sides. The wound was closed over a suction drain using catgut for the muscles, catgut for the platysma, and skin clips.

Post-Operative Progress:

28th April: Drain out. Slight cough, purulent sputum. White blood count 18,600. Sputum culture - commensals only. Chest X-ray showed no abnormality. Routine physiotherapy.

30th April: No cough. No sputum. Patient well.

COMMENTS.

1. Out of 671 cases of thyrotoxicosis treated surgically, only 13% were males. The operation tends to be technically more difficult in the male, the thyroid gland often being tightly bound to the thyroid cartilage, and more vascular than the female gland. The incidence of post-operative complications are accordingly higher in the male than in the female.

2. Pre-operative thyroid antibody complement fixation tests, operative findings and the pathological report ("treated thyrotoxicosis with many lymphoid follicles present") suggest that some degree of auto-immune (Hashimoto's) thyroiditis may have been present. (It is well recognised that a lymphadenoid goitre may develop from a previously clinically toxic one.) If this is the/-

the case with Mr. H. then he will almost certainly develop hypothyroidism in the future and require a maintenance dose of Thyroxine.

3. Pre-operative preparation of all cases of thyrotoxicosis is essential. Even minor surgery on a thyrotoxic patient may precipitate a fatal thyroid crisis.

Anti-thyroid drugs (usually Carbimazole) are stopped about 14 days prior to operation, and treatment with 60 mg. of Potassium Iodide twice daily is commenced. This not only controls the thyrotoxicosis, but it also renders the thyroid gland less vascular and less friable. Treatment is continued until the second or third post-operative day. The beneficial effects of Potassium Iodide diminish after the 14th day.

If therefore the optimum period for operation is missed owing to the patient having a sore throat or something of the sort, the whole cycle of treatment with, and withdrawal of, Carbimazole followed by administration of Potassium iodide, must be repeated and it may be a month or two before the patient is again ready for surgery.

Before operation for thyrotoxicosis it is customary on Wards 15 and 16 to render the patient unconscious with rectal Tribromoethanol (Avertin) in the ward, and thus spare him or her the emotional trauma of being wheeled to theatre. This is, for the patient, a very pleasant way of being treated, but it does put considerable demands on the nursing staff who may have to watch the patient for several hours post-operatively.

4. Medical treatment of thyrotoxicosis is designed to be reduced and tailed off to zero over a period of 6 months to a year. Treatment with Carbimazole is not, in the young, designed to be continued for life. The reason for surgery in the case of Mr. H. was failure of medical management - recurrence of symptoms of thyrotoxicosis when the dosage of Carbimazole was reduced. This also was the reason for surgery in 57.8% of 671 cases of thyrotoxicosis treated in the Royal Infirmary.

CASE IV MRS. B.

A case of papillary carcinoma of the thyroid gland presenting with lymph node metastases.

Mrs. B., now aged 38, first noticed a swelling in the midline of her neck at the age of 15. She became conscious of it because she used to do a lot of singing. However, she considered this to be of no significance and ignored it.

Twelve years later, early in 1955, she became aware of a swelling on the right side of her neck, and consulted her general practitioner on account of this in June 1955. He referred her to Mr. J.R. Cameron who considered the swelling to be possibly tuberculous in nature, but advised excision and histological examination.

On 14.7.55 Mrs. B. was admitted to Ward 14 R.I.E. On examination there was a 6 x 3 cm. swelling in the right lobe of the thyroid, and a 3 cm. swelling in the right side of the neck at the level of the ^{lyoid} thyroid bone. Mr. Cameron excised the latter right sided cervical swelling. The mass appeared to the naked eye like thyroid tissue and was lying anterior to the sternomastoid. Histological report: "The appearances are those of normal thyroid tissue showing signs of activity."

Because of the proximity of the excised tissue to the right lobe of the thyroid gland, this report cast a doubt in Mr. Cameron's mind as to whether in fact the excised tissue was part of the right lobe of the thyroid, or a lymph node metastasis. At this time, the patient was nursing a 3 month old child. For these two reasons, therefore, further surgery was delayed.

Mrs. B. remained well for a year following operation, but thought that the swelling in the thyroid region became more prominent. She was reviewed by Mr. Cameron in October 1956 and re-admitted to Ward 14 on 19.10.56. On examination a smooth mass was palpable in the right lower lobe of the thyroid and another behind the right angle of the mandible. On 26.10.56 Mr. Cameron carried out a subtotal thyroidectomy: the whole of/-

of the right lobe was removed, but a small part of the left lobe had to be left in situ because of difficulty in finding the left recurrent laryngeal nerve. The thyroid was enlarged and coarsely nodular. Histological report on swelling from lower pole of the right lobe of the thyroid: "in some areas normal thyroid tissue, in others there is papillary arrangement of cells and many show mitoses and are invading the capsule. Papillary adenocarcinoma of the thyroid gland."

A radioactive iodine uptake test was done on 5.11.56. This showed a 48 hour excretion of 57% and a maximum gland uptake in the whole neck region of 15%. There was an increase in uptake over the area of glandular enlargement.

On 14.11.56, 31 millicuries of radio-iodine were given by Dr. McGregor and the patient was discharged home. She was readmitted on 10.12.56 and a tracer dose of radio-iodine was given: there was no evidence of retention of this iodine.

From November 1956, Mrs. B. was conscious of a swelling in the right side of her neck. This enlarged progressively but did not cause her any trouble.

During this period she began to feel increasingly tired. She felt irritable, and any activity required considerable effort. Her face became a little puffed and her skin dry. She was receiving no thyroid extract.

On 25.1.57, Mrs. B. was once again admitted to R.I.E. and a further tracer dose of radio-iodine given. Urinary excretion 0-48 hours 94.8%. The gland uptake was 4.5% at 48 hours, and the amount of isotope in the plasma at 48 hours negligible. There was no uptake in the right side of the neck or in the mediastinum.

On 28.1.57 Chest X-ray showed no evidence of metastases.

1st February 1957. Wards 13/14, Mr. Cameron: Through incisions exposing the whole of the right neck, the sterno-clavicular heads of the right sterno-mastoid were divided immediately above their origin and were stripped superiorly together with the fascia of the posterior triangle. The internal jugular vein was removed together with part of the omohyoid and the anterior part of the carotid sheath. The mass/-

mass of lymph nodes was removed in one piece and as they were slightly adherent to deep structures the superficial part of the levator scapuli muscle was removed. The submandibular triangle was also dissected. The region of the thyroid gland on the right side was re-examined but no remnant of thyroid tissue seen. There were several lymph nodes which were obviously malignant to the right of the trachea, and in the right tracheo-oesophageal sulcus. These were seen to pass deep to the sternum and to extend into the mediastinum. As many of the glands as possible were removed.

Histological report was of lymph nodes from the neck partially or completely replaced by papillary adenocarcinoma, in some cases infiltrating the surrounding fibro-connective tissue. A gland from the superior mediastinum showed extensive involvement by adenocarcinoma.

On 15th February 1957 Mrs. B. was discharged home on a maintenance dose of 3 grains of thyroid daily.

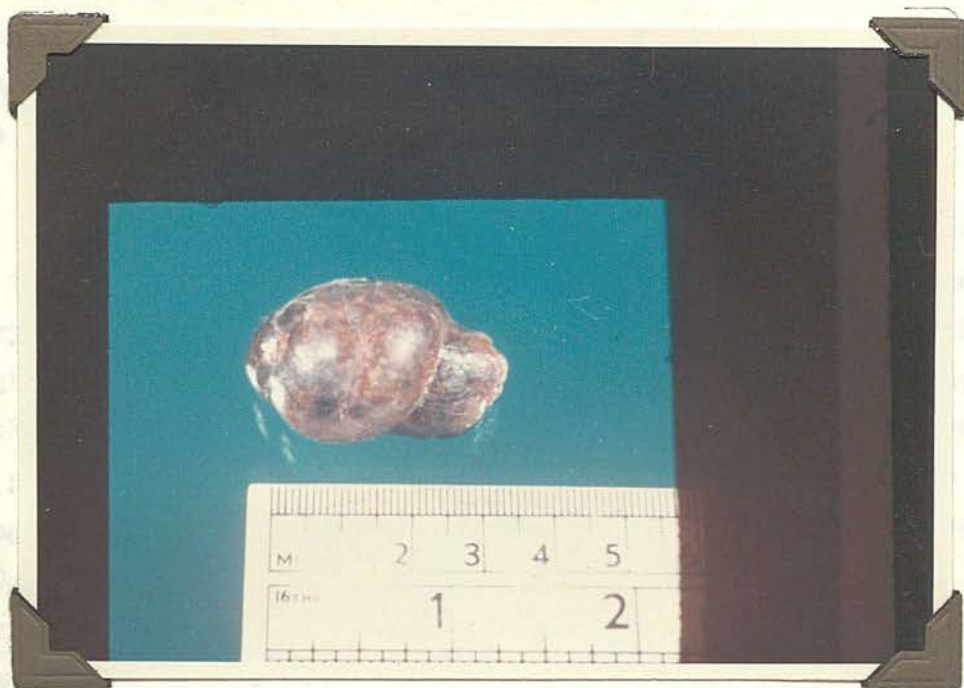
From April 1957, until September 1959, Mrs. B. reported regularly to the radiotherapy unit for routine follow up, and during the period remained well. She also reported to the Endocrine Clinic and on 9th September 1959 Dr. Lambie reported finding one firm fixed gland in the upper part of the right side of the neck, deep to the sterno-mastoid. However, when reviewed again by the radiotherapists, this gland had apparently disappeared.

On 2nd December 1959 Mr. Cameron removed a twisted ovarian cyst as an emergency procedure. Histological report was of a benign luteal cyst.

In July 1960 Thyroid 3 grains daily was stopped and substituted with 0.1 mg. Thyroxine three times daily.

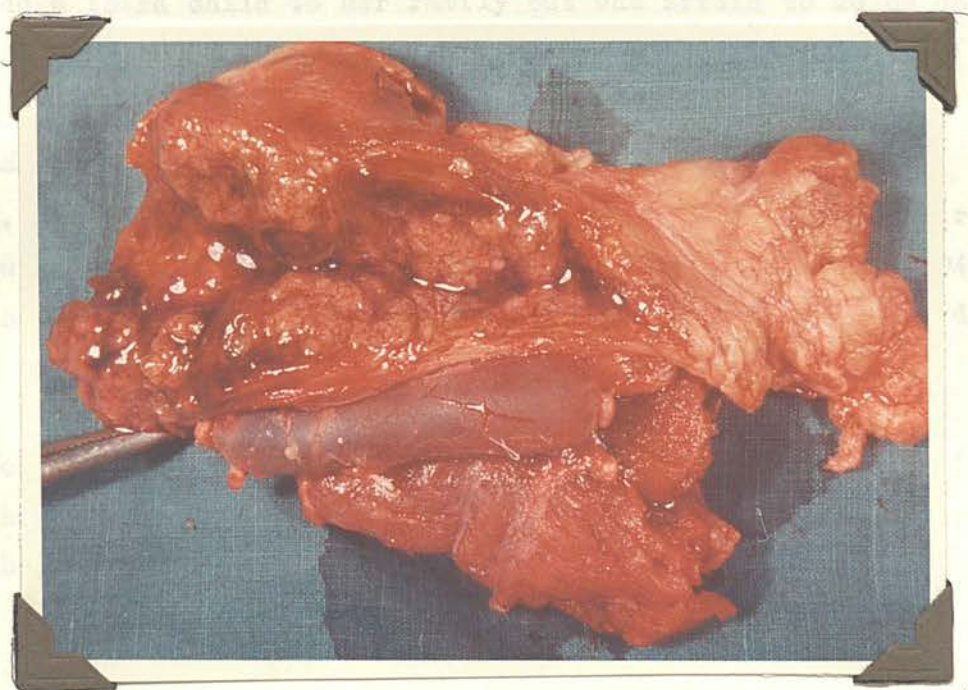
Between February 1960 and November 1966, Mrs. B. continued to report to the radiotherapy department at first at 4-monthly intervals and then at yearly intervals.

On 17th May 1967, Mrs. B. reported to Ward 15 for review by Mr. Cameron. She stated herself to be fully fit. There had been no recurrence of any swelling in her neck. Her appetite was normal and weight increasing slightly. She did not suffer from/-



July 1955. "Lateral Aberrant Thyroid"

A lymph node metastasis from a papillary
adenocarcinoma.



February 1957. Block dissection of neck
showing internal jugular vein and metastases
from papillary adenocarcinoma of the thyroid
gland.

from any respiratory, urinary or alimentary symptoms. She was not subject to headaches, vomiting or attacks of giddiness. She had never had any pains in her back or limbs. She was not irritable or nervous, was not intolerant of heat and did not perspire excessively.

On examination there was no evidence of any recurrence of tumour in her neck. There was one soft small mobile and very superficial lymph node palpable about one inch below the right mastoid process. No other nodes were palpable in the neck, axillae or supraclavicular fossae. Radial pulse was 80 per minute and regular. Palms cold and moist. A fine finger tremor was unequivocally present. Blood pressure was 160/92: patient volunteered the information that she was having pills from her doctor for high blood pressure. Examination of the chest revealed no abnormality. Surprisingly there was no evidence of any spinal accessory nerve paralysis on the right side.

Talking to Mrs. B. made it clear that she was aware that she had had a malignant condition, although she was not prepared to say so in so many words. However, this knowledge did not upset her day to day living, but she did express that she was very conscious of her neck, and any local conditions such as a sore throat gave her considerable worry. She had wanted to add a third child to her family but was afraid to do so on account of her thyroid troubles.

COMMENTS.

1. Out of a total of 1472 cases of thyroid disease, treated surgically, in one unit of the Royal Infirmary between 1948 and 1964, there were 110 cases of carcinoma of the thyroid.

Carcinoma of the thyroid is a rare disease. Professor McWhirter in the recent Clark Memorial Lecture suggested that the overall incidence was about 16 new cases per million of the population per annum. This would mean, on average, that a general practitioner would see one case every 30 years. Consequently the delay between the onset of the disease and the recognition of its nature with suitable treatment following, is likely to be considerable unless the medical profession is trained to regard all thyroid swellings as potentially malignant.

Professor McWhirter's figures showed that the greater the delay between the onset of the disease, and the institution of/-

of treatment, then the better was the prognosis:

Delay	No. of Cases	5 year Survival Rate
3 months.	137	25%
1 year	87	43%
More than 1 year	130	50%

The explanation of these paradoxical figures lies in the fact that during the delay period many of those unfortunates with undifferentiated, or metastasized tumours, have died. Those who survive more than a year are likely to have slow growing, well differentiated tumours.

The story of Mrs. B. is a case in point. She was first recognised to have thyroid carcinoma on 14th July 1955. Thyroidectomy was not carried out until 26th October 1956 - over 15 months later. She was found to have a well differentiated papillary adenocarcinoma.

2. Classically, there are three pathological varieties of carcinoma of the thyroid, but intermediate forms commonly occur. Some authorities add a fourth group - Solid Carcinoma with amyloid atroma.

855 cases of primary thyroid carcinoma diagnosed and treated by total thyroidectomy and conservative nodal dissection, where indicated, at the Mayo Clinic during the period 1926 - 1955 were analysed as follows:

(A) Papillary Carcinoma.

Age	Less Than 40 (Av. 26)	Greater than 40 (Av. 54)
5 yr. survival	98.8% (N - 162)	86.5% (N - 215)
10 yr. survival	97.1% (N - 102)	69.5% (N - 118)

N - No. of cases.

(B) Follicular Carcinoma.

5 yr. survival	- 84.9%)	N. - 106.
10 yr. survival	- 72%)	

(C) Solid Carcinoma with amyloid stroma.

5 yr. Survival	- 75.6%)	N. - 41.
10 yr. Survival	- 61.3%)	

(D) Anaplastic Carcinoma.

5 and 10 year survival less than 1%

An alternative pathological classification is simply the division of all thyroid carcinomas into two groups, I and II. Group I show at least some evidence of differentiation: Group II do not. In a series of 489 cases of thyroid carcinoma treated at the Radiotherapeutic Unit between 1935 and 1966, 46% were classified as Group I and 54% as Group II.

Mrs. B. falls into the group of papillary carcinomas in patients aged less than 40. Therefore according to this particular survey her 10 year survival chances would be of the order of 97%. However, her prognosis is likely to be worsened by two factors: she presented with metastases, and her treatment consisted of subtotal rather than total thyroidectomy.

3. Mrs. B. presented with lymph node metastases. In the past these cases were frequently labelled as "Lateral Aberrant Thyroid Tissue": This diagnosis should never now be made, since there is no evidence developmentally that aberrant thyroid tissue ever occurs in a lateral position. It is therefore necessary to perform total thyroidectomy together with removal of the affected lymph nodes in every case where lateral aberrant thyroid tissue is discovered.

4. Papillary carcinomas occur most frequently in young people. A solitary nodule (adenoma) is the site of predilection. Often while primary growth is still small, this variety of carcinoma metastasizes to the cervical lymph nodes, where it may remain localised for many years prior to further dissemination. Consequently, this variety is relatively benign.

Follicular carcinoma usually arises in middle-aged persons, and is appreciably more malignant than the foregoing. Invasion occurs into and through the capsule, whence local spread is characteristically into the venules, where clumps of growth can often be seen microscopically in the lumen. Metastases are thus via the blood stream to bones and the lungs.

Anaplastic carcinomas are more common in elderly people. Unlike other varieties, this tumour commonly arises in a normal thyroid gland. It spreads by direct extension and invasion on a broad front, and metastasizes early to the cervical and mediastinal lymph nodes and viscera.

5. Clark, White and Russel have reviewed 120 cases of cancer of the thyroid treated by total thyroidectomy in one hospital in/-

in Texas between 1944 and 1958. Within the series a group of 50 operative specimens were subjected to whole organ study. 54% of the 120 cases showed evidence of dissemination of the carcinoma within the thyroid beyond the primary focus. This number was made up of 44 out of the 50 (88%) subjected to whole organ study, and 21 of the 70 (30%) of those in which routine pathological procedures were performed. The authors conclude that subtotal thyroidectomy does not remove the carcinoma within the gland, and that total thyroidectomy will remove all the tumour cells or origin and promises a decrease in distant seeding and metastases.

Generally a stump recurrence must be regarded as a surgeon's failure; there has been insufficiently wide extirpation of the gland, or the surgeon has shrunk from the risk of injuring the recurrent laryngeal nerves and parathyroids. The frequency of local recurrence after operation for papillary carcinoma is high. From a radio-therapeutic clinic B.W. Windeyer reported that a quarter of the patients were referred because of local recurrence after previous operation for papillary carcinoma. The interval between the operation and recurrence is sometimes a matter of years.

5. Well differentiated tumours will usually take up radio-active iodine. Following thyroidectomy a radio-active iodine test revealed a considerable uptake of I^{131} over the area of glandular enlargement. A large dose - 31 millicuries - of radio-iodine was therefore given in the hope that the neoplastic tissue would take up a proportion of it, and then undergo radiation necrosis. Since thyroidectomy had already been performed, the pituitary stimulus to any functioning thyroid tissue would be maximal.

6. The usual maintenance dose of thyroxine for hypothyroid patients is 0.1 mg. daily. However, following thyroidectomy for thyroid cancer, 0.1 mg. t.i.d. is given in order to reduce the pituitary secretion of thyrotrophin to a minimum - this is a stimulus which may encourage growth of neoplastic thyroid tissue.

Refs: Clark, White and Russel. Annals of Surgery 149, 1959:858
Woolner et Al. Am. J. Surgery 102. 1961:354
Colcock & Adams. Surg. Clin. N. America 45.
1965:533

CASE V Mrs. M. Aged 71 years.

A case of Thyroid Carcinoma.

Mrs. M. first noticed a swelling on the left side of her neck in 1942. She consulted her family doctor and he prescribed some pills. These had no effect on her swelling but since Mrs. M. was then looking after five young children and the swelling was causing no symptomatology, she did not pursue the matter any further.

The swelling increased in size only very slightly over the next 24 years, and then in the spring of 1966 it began to enlarge more rapidly. Friends and relatives began to make comments about her neck and so she consulted her general practitioner. At that time her husband volunteered the information that his wife had been more apprehensive and short-tempered than usual, although Mrs. M. herself would only admit to breathlessness on exertion.

Thinking that Mrs. M. might be thyrotoxic, the G.P. referred her to M.O.P.D. of the Royal Infirmary. She was seen there on 5th August 1966. On examination she was clinically not thyrotoxic. ^{There was} A moderately large firm swelling related to the left lobe of the thyroid gland. Haemoglobin was 86%, E.S.R. raised at 35 mm./hour. Serum P.B.I. was 5.4 ug/100 ml. Chest X-ray was negative and X-ray of the neck confirmed enlargement of the thyroid gland, with displacement of the trachea to the right.

On account of the consistency of the swelling, and the recent increase in its size, she was referred for surgical opinion.

Mrs. M. was seen by Mr. McIntosh at the Surgical Consultation Department on 19th August 1966. He thought that there was a considerable possibility that the swelling was a carcinoma, and advised Mrs. M. that an operation would be necessary. At first she was not inclined to accept this advice, but when the dangers were pointed out to her, she agreed to come into hospital and her name was put on the urgent waiting list.

On 13th September, Mrs. M. was admitted to Ward 15, R.I.E. On examination the left lobe of the thyroid gland was found to be replaced by a firm well defined tumour mass, 6.5 cm. in diameter, which also involved the isthmus. There was no limitation/-

limitation of movement of the thyroid, and there was no cervical lymphadenopathy. The trachea was deviated to the right of the midline. The pulse was 80/minute and regular. Blood pressure 150/90. There was no finger tremor, lid lag, exophthalmos or other evidence of thyrotoxicosis. No dysphagia and no change in voice. Chest X-ray showed no abnormality. X-ray of neck showed marked displacement of the trachea to the right with some side-to-side compression. There was no evidence of a retro-sternal goitre. A few flecks of calcification were noted in the thyroid swelling. The vocal cords were found to be functioning normally. Routine haematological examination of the blood showed Hb. 90%, E.S.R. 12 mm/hr. and White Blood Count 7,100 with a normal differential.

On 14th September, Mrs. M. was seen by Dr. Mary Douglas on behalf of Professor McWhirter, and she agreed to arrange for X-ray therapy post-operatively if this should be necessary.

Examination of the vocal cords revealed normal function on both sides.

On 15th September, Mrs. M. was operated on by Mr. Cameron. A frozen section biopsy was reported as an adenocarcinoma, and so total thyroidectomy was carried out. Mr. Cameron was not confident that all the tumour tissue had been removed, owing to some fixity of the gland to the surrounding tissues.

The two Redivac drains were removed on the evening of operation day, and the skin clips two days later. On 17th September Mrs. M. was noticed by the nursing staff to be very hoarse. On 21st September this persisted, and examination in the E.N.T. department showed that the left vocal cord was not moving freely, and that the right cord moved across the midline, indicating an incomplete left recurrent nerve palsy.

The histological report on paraffin sections of the gland confirmed the opinion previously given on the frozen section, namely that the lesion was a moderately differentiated papillary adenocarcinoma of the thyroid.

On 17th September Mrs. M. was started on 0.1 mg. of Thyroxine three times daily. On 22nd September the wound was well healed, although there was considerable haematoma formation. It was agreed that radiotherapy should be undertaken with the patient in hospital because of her age. Accordingly, on 29th September she was admitted to the Western General Hospital.

Between 4th October and 31st October Mrs. M. received a course of twenty X-ray treatments to a full dose of 4500 rads. At the completion of treatment, she had some discomfort due to reaction, but this settled within the next few days and she was discharged home.

Mrs. M. was due to report to the E.N.T. Department on 11th November for further examination of her vocal cords. However, as she no longer had any trouble with her voice, she cancelled this appointment.

On 18th November, and 13th February 1967, she reported to the Radiotherapy Department at the Western General Hospital and was found to be well with no evidence of any recurrence of the tumour.

On Monday 22nd May, Mrs. M. reported to Ward 15 R.I.E. for review by Mr. Cameron.

She stated herself to be well and fully fit, but on further questioning admitted to palpitations and tightness in her chest on exertion, and also to a dislike of hot weather. She was still taking 0.1 mg. of Thyroxine three times daily.

On examination the transverse scar on her neck was almost imperceptible. There was no evidence of any recurrent tumour formation in her neck. There was no cervical, supraclavicular or axillary lymphadenopathy. She was clinically euthyroid. Pulse was 86/min. and regular. B.P. 150/86. The palms were warm and moist, but there was no tremor of the fingers. There was no exophthalmos or lid lag.

COMMENTS.

1. This case emphasises well the dictum that lumps in the thyroid are potentially malignant. There is no reason to suppose that this tumour had been a malignant growth for all its 24 years of existence. However, the recent rapid increase in size should have been regarded as a very ominous sign. Even then it is noteworthy that the General Practitioner's chief reason for referring this lady for a Consultation was a suspicion of toxicity.
2. Because of the fixity of the gland in the case of Mrs. M. complete removal of all neoplastic tissue could not be guaranteed. For this reason post-operative radiotherapy was employed.

3. One must be guarded when assessing the prognosis in this case. Bearing in mind the moderate differentiation reported on histological examination, and the absence of lymph node involvement, together with her age of 71 years, the chances of Mrs. M. realising full expectation of life are good. The minimal infiltration of the cancer into the surrounding tissues was the only poor prognostic sign.

4. Routine laryngoscopic examination must ^{always} be made before thyroidectomy as 3 to 5 per cent of patient with a goitre are found to have paresis or paralysis of one vocal cord, although no symptoms point to such a lesion. Pre-operative paralysis of a vocal cord with symptoms, e.g. a recent husky voice, is highly suggestive that the goitre is carcinomatous.

The muscles of the larynx are innervated by the recurrent laryngeal nerves, with the exception of the crico-thyroid muscle which is supplied by the superior laryngeal nerve. Semon's Law states that in progressive laryngeal paralysis of organic origin the abductors of the cord are affected before the adductors. Damage to one or both recurrent laryngeal nerves by a goitre or by surgery for the removal of the same, may have several results.

The most common is a unilateral midline paralysis. The affected cord lies in the midline. This is caused by paralysis of the abductors, but not the adductors of the cord. The symptoms are a mild degree of hoarseness which later disappears following compensatory adjustment in actions of normal portions of the larynx to provide normal phonation.

The next most common result is the paralysis of all the laryngeal muscles of one side, except the arytenoids which has a bilateral innervation. The affected cord is concave and in a position midway between phonation and approximation. On phonation the sound cord crosses the midline to meet the disabled cord. This is known as a unilateral incomplete paralysis. The patient has a husky voice which improves with the adjustments which are made in time.

It is likely that Mrs. M. suffered from a condition somewhere intermediate between a unilateral midline and incomplete paralysis. When examined on 22nd May 1966 there was no trace of any hoarseness, but the patient did comment that she was unable to sing as she had been able to pre-operatively.

Other/-

Other forms of laryngeal paralysis following thyroid surgery are as follows:

- (a) Bilateral midline paralysis in which the larynx is paralysed shut. The voice is good, but tracheostomy may be necessary to avoid asphyxiation. Treatment consists of a plastic operation to improve the airway and maintain the voice.
- (b) Bilateral Incomplete Paralysis in which there is a husky voice, poor coughing performance and difficulty in raising secretion. Partial recovery may result in bilateral midline paralysis.
- (c) Complete Laryngeal Paralysis in which there is a serious risk of pulmonary infection, and which has a poor prognosis.
- (d) Cricothyroid Paralysis which follows damage to the superior laryngeal nerve(s). The sensory nerve supply to the larynx is also damaged and the larynx rendered anaesthetic, with consequent danger of inhalational pneumonia.

The risk of injury to the recurrent laryngeal nerves during operation may be reduced by dividing the middle thyroid veins at least half an inch lateral to the vicinity of the nerves, and by ligating the inferior thyroid artery well away from the thyroid gland.

5. It was noted that Mrs. M. suffered some discomfort following radiotherapy. This was due to irradiation sickness consisting of fatigue, headache, loss of appetite, vomiting and sometimes irradiation parotitis causing a dry mouth. This condition usually settles spontaneously and requires only symptomatic treatment.

CASE VI. MISS B.

This retired hospital matron, aged 62, first noticed a painless swelling in her neck a few months ago. Although cognizant of the possible significance of this, she hopefully awaited its disappearance. When, after six weeks, it had failed to decrease in size, she consulted her general practitioner. He referred her to Mr. Wilson at the Surgical Consultation Department. Mr. Wilson considered that the lump should be subjected to pathological examination because of the possibility of malignancy. Two months later Miss B. was therefore admitted to Ward 14.

On admission on 23rd May, examination revealed a firm hard, smooth swelling about 2 cm. in diameter in the right lobe of the thyroid gland. This moved when the patient swallowed and was not attached to skin. There was no associated lymphadenopathy. No bruit was heard over the gland. Pulse was 100 per minute and regular. Blood pressure 140/90. There was no exophthalmos, lid lag or lid retraction, and no tremor or other evidence of thyrotoxicosis.

Routine haematological examination revealed no abnormality apart from a slightly raised white count of 11,400. Serum P.B.I. was 80 ug per 100 ml. X-ray of chest showed no abnormality. X-ray of the cervical spine showed considerable osteoarthritis particularly at C.5-6 and C.6-7 levels, and disc narrowing. There was some thyroid enlargement but no definite tracheal narrowing.

On 24th May, Miss B. was seen by Professor McWhirter who agreed that the findings pointed to malignancy and also thought that there was some limitation of movement of the larynx on swallowing. He agreed to provide post-operative megavoltage radiotherapy.

Vocal cords were examined and found normal.

On 25th May, Miss B. was transferred to Ward 15 under the care of Mr. Cameron, and on 26th, an operation was performed. The right lobe was found to be markedly nodular and two or three times the normal size. The nodules were hard but not calcified. The/-

The gland was not adherent to any of the surrounding muscles. The superior thyroid artery, middle thyroid veins, inferior thyroid veins and inferior thyroid artery of the right side were in turn ligated and divided. Parathyroid four was located and preserved, as was the right recurrent laryngeal nerve. A total right hemi-thyroidectomy was then carried out and specimens of the right lobe of the thyroid were sent for frozen section. It was not possible to say grossly on inspection the thyroid was malignant.

Frozen section examination was equivocal. In some areas there were irregularities of the acini suggestive, but not diagnostic, of malignancy. In other areas there was a marked lymphocytic invasion giving a picture more like that of a thyroiditis. The problem then facing the surgeon was whether to proceed at that time to a total thyroidectomy, or whether to leave half of the gland in situ, and risk having to re-operate later on an area with distorted anatomy due to adhesions and granulation tissue, with attendant risk to the parathyroids and laryngeal nerves. In view of the fact that one parathyroid gland and the right recurrent laryngeal nerve were definitely intact, Mr. Cameron removed only a small portion of the anterior part of the left lobe of the thyroid, together with the isthmus. The superior and inferior thyroid arteries on the left side were not ligated, and the remainder of the left lobe was left intact.

Post-operative progress was uneventful. The drain was removed one day, and the skin clips three days, post-operatively.

On 31st May the pathological report on paraffin sections of the gland was returned. This is quoted as follows: "A single area shows carcinoma of the thyroid, in parts of which a papillary pattern is evident but in which some areas are poorly differentiated. Calcified microspherules are present in some areas. Sections of other parts of the thyroid show a focal lymphocytic thyroiditis."

Treatment of carcinoma of the thyroid consists of total thyroidectomy where-ever feasible. On 2nd June, Mr. Cameron therefore removed the remainder of the left lobe of the thyroid. The right side with its known intact laryngeal nerve and parathyroid gland was left well alone, and the left lobe carefully dissected out from amongst the surrounding oedematous tissue. One parathyroid gland was seen and carefully preserved.

Frozen sections of the left lobe showed no evidence of malignancy.

Immediately post-operatively the left vocal cord did not appear to be moving, but full examination in a few days time would have to be awaited to see if there was any true paresis.

Miss B. was started on 0.1 mg. of Thyroxine t.i.d. post-operatively.

COMMENTS.

1. Solitary nodules of the thyroid should always be regarded as potentially malignant until proved otherwise by excision and histological examination. In one particular series, J. de J. Pemberton found that one third of all such nodules were malignant.
2. This case illustrates well the extreme difficulty of identifying, with certainty, malignant change in thyroid tissue, in some cases. The technique of examining sections cut from frozen blocks of tissue, allows a histological diagnosis to be given within a few minutes of receiving the specimen. Such sections are usually stained with methylene blue, giving colours relatively unfamiliar to the eye of the pathologist trained to look at H. & E. Sections. When diagnosis is in part dependent upon recognizing subtle changes of hue, an unfamiliar stain may cause great difficulty: satisfactory staining of frozen sections by Haematoxylin and Eosin, in the very short time available, is rarely achieved. In difficult cases diagnosis must await examination of sections cut from tissue which has been chemically fixed and embedded in paraffin wax. Even then there have been cases recorded where pathologists have been divided 3:2 on the issue of possible malignancy of thyroid tissue.
3. The delay of two months between the patient's appointment at S.C.D. and her admission to hospital was unfortunate in view of the likely diagnosis of malignancy.
4. Post-operative radiotherapy is arranged in order to finally ablate any remaining malignant cells. Radiotherapy is no substitute for incomplete surgery, but should nevertheless be given in all cases, except possibly where very well differentiated tumours are removed at a very early stage.
5. An assessment of prognosis in this case must be guarded in view of the fairly rapid de novo appearance of the swelling, and/-

and also of the pathological report that some areas were poorly differentiated.

CONCLUDING REMARKS.

The treatment of goitre to-day demands the closest co-operation between Physician, Surgeon and Radiotherapist. Some cases will be the domain of the Surgeon, others of the Physician, others of the Radiotherapist, and yet others a combination of these. Each must have a thorough working knowledge of the capabilities, limitations and responsibilities of the others. Their's is the responsibility to educate present and future General Practitioners, who, in almost all cases, are the first advocates of the patient. In particular there is a need to impress upon the family doctor the importance of recognising that non toxic goitres, especially those occurring in males, are potentially malignant cancers. Advances in the treatment of carcinoma of the breast have followed the consciousness of the potential malignancy of all lumps, with consequent earlier diagnosis. Similar principles with reference to the thyroid gland are called for.

Theodore Kocher's mortality rate following operation for simple nodular goitre was eventually as low as 0.5%. Indeed in one particular series of 600 cases in 1898, there was but one death, and that was due to chloroform anaesthesia. The mortality rate following operation for non-toxic goitre in Mr. Cameron's series was 0.3%. Kocher's success in preserving the recurrent laryngeal nerves and parathyroid glands was at least equal to that of the surgeon to-day.

The inference is that there can be no substitute for the precision and deliberateness of technique so splendidly embodied in Kocher. But where therapeutic success has been dependent on advances in physiology and biochemistry, themselves often the product of surgery, the mortality and morbidity of thyroid disease has been greatly reduced.

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 274
Report Slips Mount

SURNAME (Block Letters) Mr Mrs Miss	CHRISTIAN NAME	UNIT No.
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REPORTS

A P P E N D I X

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 Admission notes.

SURNAME (Block Letters)

Mr Mrs Miss WALLACE.

CHRISTIAN NAME

ELIZABETH.

CASE No.

11232

Date

Physical Examination :

General features Fit looking. Exophthalmos & Lid Retraction.

Dyspnoeic No.

Cyanosis None

Jaundice No

Pale No

Finger clubbing No

Lymphadenopathy None. Breasts ~~normal~~. Lacked partially inverted L. nipple.

C.V.S. Pulse 88/min. occasional extrasystole.

B.P. 160/105 mm Hg.

A.B. Thumping. Not displaced laterally.

Thrills No.

H.S. I & II Normal - No murmurs.

J.V.P. Not raised. H.J.R. No.

Oedema : Sacral Nil

Ankle Nil.

Fundi Normal.

Peripheral pulses : Br. Rad. Ulnar. Fem. Pop. D.P. P.T. Car.

R. + + + + + + +

L. + + + + + + +

R.S. Trachea Central.

Chest Movement Symmetrical. Good expansion.

P.N. = PN Resonant.

B.S. vesicular. No added sounds

V.R. = VR Normal

Date	<u>A.S.</u>	Teeth	Her own .	Normal .
		Tongue	Not fixed .	
		Fauces	Clear .	
		Abdomen: Movement with respiration	Yes .	
		Scars	Nil	
		Herniae	anfrices intact .	
		Tenderness	No	
		Guarding	No	
		Masses	None	
		Liver	} not palpable .	
		Spleen		
		Bowel sounds	Present .	Physiological .
		P.R.	} not Done	
		P.V.		
	<u>G.U.S.</u>	Bladder	Not distended	
		Kidneys	Not palpable .	
		Genitalia		
	<u>C.N.S.</u>	Level of consciousness	Alert .	
		Cough reflex	Present	
		Corneal reflex	Present .	
		Gag reflex		
		Cranial nerves:		
		I.		
		II. Acuity	Normal .	
		Fields		
		Pupils	Round .	Equal .
			Reacting to Light	+ accommodation .
		III. IV. VI.	Intact	
		V. Motor	✓	
		Sensory	✓	
		VII.	✓	
		VIII. Vestibular	✓	
		Auditory	✓	
		IX.	✓	
		XI.	✓	
		X	✓	
		XII	✓	

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 344 Clinic and Ward Notes

SURNAME (Block Letters)

CHRISTIAN NAME

CASE No.

Mr
Mrs
Miss

Date

Reflexes :

B.

T.

K.

A.

Abd.

Pl.

R.

+

+

+

+

+

↓

L.

+

+

+

+

+

↓

Sensation :

Grossly intact

Co-ordination :

Good

Power :

Good

Description of Special Features :

Date admitted:

Smooth ^{hard} & symmetrically enlarged thyroid

Time admitted:

Slight difficulty in swallowing. No bruit.

Drug taken:

Exophthalmos + lid retraction.

Quantity:

Time & Date Taken:

Clinical Diagnosis :

Primary Toxic Goitre.

SURNAME (Block Letters)

CHRISTIAN NAME

CASE No.

Mr
Mrs
Miss
WALLACE.

ELIZABETH.

Date

SUMMARY OF CASE

11/4/67.

Operation Note.

Incision.

Low cervical transverse after infiltration with 1:500,000 Adrenaline. Flaps were dissected upwards & downwards, and the strap muscles separated in the midline to expose the thyroid.

Findings.

Toxic goitre. Early nodular.

Procedure.

The left lobe was mobilised first by division between ligatures of the middle thyroid vein and superior thyroid pole. No inferior thyroid artery could be found on this side. The right side was then mobilized in a similar manner, but here a moderate sized inferior thyroid artery was dissected free and ligated in continuity behind the carotid sheath. The inferior thyroid veins were divided piecemeal and the trachea exposed. At the upper end there was a large pyramidal lobe passing upwards from the right side of the isthmus and terminating over the extreme upper limit of the larynx. This was dissected free and its small superior stump ligated. The isthmus was then divided between clamps. Subtotal thyroidectomy was then carried out on each side, leaving approximately $\frac{1}{3}$ of the gland.

Haemostasis was achieved by ligation of individual bleeding points and by continuous haemostatic suture of Catgut.

The right inferior parathyroid gland was seen and carefully reserved.

Date

Closure.

Redirac drain inserted. Strap muscles were closed with continuous catgut. The platysma was sutured with continuous catgut, and the skin edges closed with clips.

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 343 Clinic and Ward Notes

SURNAME (Block Letters)

Mr
Mrs
Miss

SINCLAIR.

CHRISTIAN NAME

Jessie.

CASE No.

10388.

Date

Physical Examination :

General features Flushed . Slightly Tense . Average intelligence .

Dyspnoeic No

Cyanosis nil

Jaundice nil

Pale No

Finger clubbing nil

Lymphadenopathy nil Breasts NAD

C.V.S. Pulse 70 . Regular . Good volume .

B.P. 140 / 85

A.B. 5th space . Mid Clavicular Line .

Thrills None

H.S. I + II Normal No murmurs .

J.V.P. Not Raised H.J.R. No .

Oedema : Sacral No

Ankle No .

Fundi Normal .

Peripheral pulses : Br. Rad. Ulnar. Fem. Pop. D.P. P.T. Car.

R. ✓ ✓ ✓ ✓ ✓ ✓

L. ✓ ✓ ✓ ✓ ✓ ✓

R.S. Trachea Central .

Chest Movement Symmetrical . Poor expansion .

P.N. = PV Resonant .

B.S. Vesicular . Diffuse fine Creps over back .

V.R. = vR Normal

Date

A.S. Teeth False.

Tongue Furred.

Fauces Normal.

Abdomen: Movement with respiration Yes.

Scars Nil

Herniae Onfices intact

Tenderness No

Guarding No

Masses No

Liver } not palpable.

Spleen

Bowel sounds Respt. Physiological.

P.R. } not done.

P.V.

G.U.S. Bladder Not distended.

Kidneys Not palpable.

Genitalia

C.N.S. Level of consciousness Alert.

Cough reflex

Corneal reflex

Gag reflex

Cranial nerves:

I.

II. Acuity Fields Diminished.

Pupils Equal, Round, Reacting to light + accommodation.

III. IV. VI.

Intact.

V. Motor Sensory

Intact

VII.

Intact

VIII. Vestibular Auditory

✓

IX.

✓

XI.

✓

X.

✓

XII.

✓

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 344 Clinic and Ward Notes

SURNAME (Block Letters)
Mr
Mrs
Miss

CHRISTIAN NAME

CASE No.

Date

Reflexes : B. T. K. A. Abd. Pl.

R. + + + + ↓

L. + + + + ↓

Sensation : Grossly intact.

Co-ordination : Good.

Power : Good

Description of Special Features :

Date admitted : This patient is clinically euthyroid.

Time admitted : There is a cystic swelling about 2cm. in diameter

Drug taken : to the right side of the isthmus, and a similar

Quantity : smaller swelling at the upper end of the left

Time & Date Taken : lateral lobe. Gland moves well on swallowing. No

bruit present. Swellings are smooth & regular. No associated lymphadenopathy.

No finger tremor. No exophthalmos, lid lag or lid retraction. No conjunctivitis.

Hands warm & sweaty.

Clinical Diagnosis :

SURNAME (Block Letters)

Mr
Mrs
Miss

SINCLAIR.

CHRISTIAN NAME

JESSIE.

CASE No.

Date

SUMMARY OF CASE

Operation Note.

Incision.

Thyroid collar incision after infiltrating subcutaneous tissues with 1, 500, 000 Adrenaline.

Procedure.

The thyroid gland was exposed in the usual fashion, separating the strap muscles. There was a definite quite large nodule at the upper pole of the left lobe. There was a similar but larger nodule in the middle of the right lobe. The middle thyroid veins on both sides were divided and the superior pole was ligated and freed. The inferior thyroid veins were divided between ligatures. Neither inferior thyroid artery was tied. A parathyroid gland was seen on each side. The isthmus and $\frac{2}{3}$ of the right lobe were resected, and the capsules of the remaining stumps oversewn and thus about $\frac{1}{3}$ of the gland remained intact. The remaining gland appeared normal to the naked eye. A specimen was sent for histological examination. Bleeding was controlled by the application of a small piece of oxycel gauze to the persistent ooze from the right upper pole. The wound was then closed in the usual fashion after introducing a suction drain. The skin was closed with clips.

Summary.

Thyroidectomy for nodular goitre.

Date

Pathology Report.

Macro.

Two lobes of thyroid together weighing 24 gm. Cysts of up to 0.1 cm. in diameter were seen in several nodules.

Micro.

This is a nodular goitre. There is great variation in follicular size and in one area a small encapsulated micro-follicular adenoma was seen. The stroma shows patchy hyalinisation and contains a few scattered lymphocytes.

There is no histological evidence of hyperthyroidism or malignancy.

SURNAME (Block Letters)

33.

CHRISTIAN NAME

CASE No.

Mr
Mrs
Miss

O'HANLON

FREDERICK.

11097.

Date

COMPLAINTS AND THEIR DURATION

24/4/67

Loss of wt. (28 stones).

Bad temper - 2 years.

Swelling in neck - 2 years.

HISTORY

About two years ago this patient first noticed that his appetite was increasing & his wt. decreasing. Referred to Dr. Irvine Oct 65. There was some symptomatic improvement until his Carbimazole was reduced in dosage after about 1 year of treatment. Dosage was subsequently increased again with symptomatic improvement.

At present patient still complains of some short-temperedness & minimal increase of appetite. Bowels normal at 1-2/day. No diplopia. No gritty sensation in eyes. Dislikes hot weather. Gets "palpitations" when tired in the evenings, usually after returning to bed.

Swelling in neck does not trouble him - except that when swallowing hard food, he feels conscious of his swelling.

Systematic Enquiries.

RS Morning cough. no dyspnoea.

CVS "Palpitations" in evening - says that sometimes after returning to bed he becomes conscious of his heart beating fast. Has not mentioned this to his own doctor.

AS Bowels regular.

GU No nocturia (except post potandum). No dysuria.

Date

CNS. No headaches, dizziness.

Past Health -

1966 Inguinal Hernia.

No TB, RHF, Diabetes. No allergies.

Family History

1 Daughter A/W.

Mother had CVA. Now A/W.

No family history of thyroid disorders.

Father retired after accident at work.

Social History.

Mill worker.

Smokes 20-25/day.

Moderate beer drinker.

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 348 Clinic and Ward Notes

SURNAME (Block Letters)

Mr
Mrs
Miss

CHRISTIAN NAME

CASE No.

Date

Physical Examination :

General features *fit. Co-operative. Swelling in neck.*

Dyspnoeic *NO*

Cyanosis *NO*

Jaundice *NO*

Pale *NO*

Finger clubbing *NO. Warm moist palms. No tremor.*

Lymphadenopathy *None.*

C.V.S. Pulse *96 Regular.*

B.P. *140/85.*

A.B. *Not palpable.*

Thrills *NO.*

H.S. *I & II Normal. No thrills.*

J.V.P. *Not raised.* H.J.R. *NO.*

Oedema : Sacral

Ankle

None.

Fundi

Peripheral pulses : Br. Rad. Ulnar. Fem. Pop. D.P. P.T. Car.

R. *+* *+* *+* *+* *+* *+* *+*

L. *+* *+* *+* *+* *+* *+* *+*

R.S. Trachea *Central.*

Chest Movement *Good. Symmetrical.*

P.N. = P.V. *Resonant.*

B.S. *Vesicular* *Few scattered Rales in Rt. Mid zone.*

V.R. = V.R. *Normal.*

Date

A.S.

Teeth

Tongue ✓

Fauces

Abdomen: Movement with respiration Yes

Scars L. Groin -

Herniae orifices intact.

Tenderness No

Guarding No

Masses none

Liver

Spleen

Bowel sounds Physiological.

P.R.

P.V.

G.U.S.

Bladder

Kidneys

Genitalia

L. Scrotal swelling above testes ? varicocele.

C.N.S.

Level of consciousness

Good.

Cough reflex

Corneal reflex

Gag reflex

Cranial nerves:

I.

II. Acuity
Fields

Pupils

Round, Equal, reacting to light + accommodation.

III. IV. VI.

V. Motor
Sensory

VII.

VIII. Vestibular
Auditory

IX.

X.

XI.

XII.

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 844 Clinic and Ward Notes

SURNAME (Block Letters)

Mr
Mrs
Miss

CHRISTIAN NAME

CASE No.

Date

Reflexes :

B.

T.

K.

A.

Abd.

Pl.

R. ++

+

+

++

↓

L. ++

+

+

++

↓

Sensation :

Not tested.

Co-ordination :

Good.

Power :

Good.

Description of Special Features :

Date admitted :

Smooth enlargement of both lateral lobes of

Time admitted :

thyroid & of isthmus which lies very low over trachea

Drug taken :

No associated lymphadenopathy.

Quantity :

No exophthalmos. No lid lag or retraction. No

Time & Date Taken :

conjunctivitis.

Warm moist palms. No tremor.

Clinical Diagnosis :

Primary Toxic Goitre. At present Euthyroid.

Date

Investigations

FBE Hb. 15.7 gm %. PCV 46%. ESR 9. WBC 18,600.

X Match

CXR

MAD.

Neck X Ray. Moderate tracheal compression at C4. No deviation of trachea.

Electrolytes. H₂O 35. Na 139 K 3.6. HCO₃ 24.

Progress.

26/4/67.

Thyroidectomy

T. J. McNair.

Procedure: Skin was infiltrated with diluted Atheraline.

Incision: The usual skin crease thyroid incision was made & the strap muscles separated.

Findings: The left lobe of the thyroid gland was only slightly enlarged but was markedly granular & vascular and adherent to the underlying strap muscles as though to suggest thyroiditis. The right lobe was in size and was more of a toxic nature, but was still to some extent adherent posteriorly. The appearances suggested a toxic thyroiditis. The left lobe was mobilized in the usual fashion & the middle thyroid vein divided. The superior pole was mobilised & its vessels ligated. The inferior left thyroid artery was tied in continuity well away from the thyroid gland itself. Similarly the superior pole, the inferior thyroid artery and the middle thyroid veins were dealt with in the right side. The inferior thyroid veins were then serially ligated across the lower borders of the gland & the gland thus mobilised. The pyramidal lobe was then freed & the small isthmus divided. A $\frac{3}{8}$ thyroidectomy was then carried out on either side leaving a small stump of gland on either side. The capsules of the gland remaining were carefully oversewn to achieve haemostasis but persistent oozing occurred from lower down on the left side from an open vein in the suprasternal notch.

SURNAME (Block Letters) Mr Mrs Miss	CHRISTIAN NAME	UNIT No.
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REPORTS

This was eventually caught & ligated. Finally, the gland appearing dry, the wound was closed in the usual fashion after introducing a suction stab drain into the lower flap. The line of excision was carried out in the usual fashion to safeguard the recurrent laryngeal nerves. There being adequate thyroid tissue left medial to the line of excision to protect the tracheal oesophageal groove. Finally the wound was closed with catgut for muscles, catgut for platysma, skin clips.

Summary.

Toxic Thyroid. $7/8$ thyroidectomy. ? thyroiditis present in keeping with pre-operative tests.

8/4. Slight cough. Sputum for culture - NAD.

Pathological Report.

There is diffuse and marked lymphocyte infiltration of glands with many lymph follicles showing active germinal centres. There is no evidence of neoplasia.

Diagnosis: Treated Thyrotoxicosis with many lymphoid follicles present.

Re op. need.

26/4.

Bromethol.

omnopon. 15mg.

Hyoscine. 0.3mg.

K1 60mg hot 24/4 - 30/4.

Note. Case IV. Mrs B \equiv Mrs. Robina Battantyne. Case No. 1622.

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 348 Clinic and Ward Notes

SURNAME (Block Letters)

Mr
Mrs
Miss

MacDonald

CHRISTIAN NAME

Lilian

CASE No.

10477

Date

Physical Examination :

General features

No signs of Thyrotoxicosis.

Dyspnoeic

No

Cyanosis

No

Jaundice

No

Pale

No

Finger clubbing

No

Lymphadenopathy

None axillary, cervical or inguinal

C.V.S. Pulse

80/min Regular.

B.P.

150/90.

A.B.

Not palpable

Thrills

None

H.S.

I + II Normal No murmurs.

J.V.P.

Not raised.

H.J.R.

Oedema : Sacral

None

Ankle

None

Fundi

Peripheral pulses : Br. Rad. Ulnar. Fem. Pop. D.P. P.T. Car.

R.

+

+

+

+

L.

+

+

+

+

R.S. Trachea

Deviated to the right.

Chest Movement

Good. Symmetrical.

P.N. = PV resonant.

B.S.

Vesicular. No added sounds

V.R.

Normal

Date	A.S.	Teeth	
		Tongue	Moist.
		Fauces	
	Abdomen:	Movement with respiration	Yes.
		Scars	No.
		Herniae	orifices intact.
		Tenderness	No.
		Guarding	No.
		Masses	None.
		Liver	} not palpable.
		Spleen	
		Bowel sounds	Physiological
		P.R.	
		P.V.	
	G.U.S.	Bladder	Not distended.
		Kidneys	not palpable.
		Genitalia	
	C.N.S.	Level of consciousness	Good.
		Cough reflex	
		Corneal reflex	
		Gag reflex	
	Cranial nerves:		
	I.		
	II.	Acuity	
		Fields	
		Pupils	Round equal reacting to light + accommodation.
	III. IV. VI.		✓
	V.	Motor	✓
		Sensory	✓
	VII.		✓
	VIII.	Vestibular	✓
		Auditory	✓
	IX.		✓
		XI.	✓
	X.		✓
		XII.	✓

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 344 Clinic and Ward Notes

SURNAME (Block Letters)

Mr
Mrs
Miss

CHRISTIAN NAME

CASE No.

Date

Reflexes :

B.

T.

K.

A.

Abd.

Pl.

R.

+

+

+

+

↓

L.

+

+

+

+

↓

Sensation :

Not tested.

Co-ordination :

Good

Power :

Good.

Description of Special Features :

Date admitted :

Time admitted :

Drug taken :

Quantity :

Time & Date Taken :

The left lobe of the thyroid gland is largely replaced by a tumour mass 6.5 cm. in diameter, which also involves the isthmus.

There is limitation of the movement of the thyroid and the trachea is deviated to the right.

No exophthalmos, lid lag, finger tremor, or other evidence of thyrotoxicosis.

Clinical Diagnosis :

? Carcinoma of thyroid.

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 348 Clinic and Ward Notes

SURNAME (Block Letters)

CHRISTIAN NAME

CASE No.

Mr
Mrs
Miss
BAIN

Catherine

11265

Date

Physical Examination :

General features

Looks fit.

Dyspnoeic

No.

Cyanosis

No

Jaundice

No

Pale

No

Finger clubbing

No

Lymphadenopathy

None - Cervical, axillary or inguinal.

C.V.S. Pulse

100/min Regular.

B.P.

140/90.

A.B.

Diffuse.

Thrills

No.

H.S.

I+II Normal. Systolic ejection murmur of neck.

J.V.P.

Not raised.

H.J.R.

-

Oedema : Sacral

Ankle

None.

Fundi

Peripheral pulses : Br.

Rad.

Ulnar.

Fem.

Pop.

D.P.

P.T.

Car.

R.

+

+

+

+

?

+

+

L.

+

+

+

+

?

+

+

R.S. Trachea

Central.

Chest Movement

Good, Symmetrical.

P.N. = PN

Resonant.

B.S.

Vesicular.

V.R. = VR.

Date

A.S.

Teeth

Tongue

Clean + Moist.

Fauces

NAD.

Abdomen: Movement with respiration

Scars

No

Herniae

Orifices intact.

Tenderness

No

Guarding

No.

Masses

None.

Liver

Edge palpable at costal margin.

Spleen

Impalpable.

Bowel sounds

Present.

P.R.

-

P.V.

-

G.U.S.

Bladder

} Not palpable.

Kidneys

Genitalia

C.N.S.

Level of consciousness

Cough reflex

✓

Corneal reflex

Gag reflex

Cranial nerves:

I.

II.

Acuity
Fields

Pupils

Equal, round, reacting to light + Accommodation.

III.

IV. VI.

✓

V.

Motor
Sensory

✓

VII.

✓

VIII.

Vestibular
Auditory

✓

IX.

✓

XI.

✓

X.

✓

XII.

✓

THE ROYAL INFIRMARY OF EDINBURGH

Misc. 344 Clinic and Ward Notes

SURNAME (Block Letters)

Mr
Mrs
Miss

CHRISTIAN NAME

CASE No.

Date

Reflexes :

B.

T.

K.

A.

Abd.

Pl.

R.

+

+

+

+

↓

L.

+

+

+

+

↓

Sensation :

Grossly intact.

Co-ordination :

Good.

Power :

Good.

Description of Special Features :

Date admitted :

Time admitted :

Drug taken :

Firm swelling in right lobe of thyroid, about

Quantity :

2 cm. in diameter. Not fixed, and moves on

Time & Date Taken :

Swallowing. No bruit.

Clinical Diagnosis :

? Carcinoma of Thyroid.